

Marked-up amended claims for Examiner's convenience.

1. A process for separation or concentration of organic of at least one of neutral or charged compounds in a feed solution, said process comprising the steps of:
 - a) passing at least once a feed solution containing neutral and charged organic compounds through an electrodialysis cell under electrical field, said electrodialysis cell comprising at least one charged membrane, and at least one filtration membrane, said cell being operated with no pressure differential between the cell compartments; and
 - b) collecting separated fractions of permeate after passage of said neutral or charged compounds through said filtration membrane, each separated fraction containing separately neutral or charged compounds,
wherein an ionic solution circulates between said charged membrane and said filtration membrane on the side of the filtration membrane opposed to the side on which circulates the charged compounds containing feed solution, the charged compounds passing through said filtration membrane in the ionic solution during passage in the electrodialysis cell, and neutral compounds remaining in the feed solution.
2. The process of claim 1, wherein said electrodialysis cell comprises, at least one cationic membrane, at least one filtration membrane, and at least one anionic membrane on the side of the filtration membrane opposed to the side of the cationic membrane.
3. The process of claim 1, wherein pH of said feed solution is adjusted to preserve the charges of said compounds.
4. The process of claim 1 being a batch recirculation process.
5. The process of claim 1, wherein said anionic, neutral or cationic charged organic compounds are separated simultaneously during performing the process.
6. The process of claim 1, wherein said filtration membrane is a cellulose ester ultrafiltration membrane.

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7. The process of claim 1, wherein said filtration membrane has a molecular weight cut off selected in the range of between 0.1 to 50 000 kDa.
8. The process of claim 1, wherein said filtration membrane is charged or neutral membrane.
9. The process of claim 1, wherein pH of said peptide composition feed solution is of between 2 to 11.5.
10. The process of claim 1, wherein said compounds are of animal or vegetable origin.
11. The process of claim 1, wherein said compounds are physically, chemically or enzymatically hydrolyzed before performing step a).
12. The process of claim 1, wherein said composition flows through said electrodialysis cell at a rate of between 0.1 to 10 L/min., and said permeated at a rate of 0.1 to 150 L/min..
13. The process of claim 1, wherein said feed solution of step a) comprises neutral organic compounds.
14. The process of claim 1, wherein said passing of step a) is performed by continuous recirculation of the feed solution through the electrodialysis cell.
15. The process of claim 1, wherein said permeate is an aqueous solution or a salted solution thereof.
16. The process of claim 12, wherein said permeate comprises salts at a concentration between 0.01 to 10 g/L.
17. The process of claim 1, wherein said feed solution comprises acid compounds having pH of below 5.0, neutral compounds having pH between 5.0 to 8.0, and basic compounds having pH over 8.0.

18. The process of claim 1, wherein where at least two filtration membranes are used to allow targeted molecular weight separation of said compounds in combination with charge separation.
19. The process of claim 1, wherein said electrodialysis cell comprises at least two filtration membranes, each filtration membrane having molecular weight cut-off different from the other or the others.
20. The process of claim 1, wherein said electrodialysis cell comprises at least one cationic membrane, at least one filtration membrane and at least one anionic membrane, each membrane being separately compartmented.
21. The process of claim 18, wherein pH in a compartment is different from pH of others compartments.
22. The process of claim 1, wherein said electrical field is pulsed.
23. The process of claim 1, wherein said electrical field comprises pulse periods of inverted electrical field.
24. A system for separation or concentration of organic charged compounds in a feed solution, said system comprising an electrodialysis cell comprising positive and negative electrodes apart thereof, and at least one charged membrane and at least one filtration membrane, both membranes being adapted one relatively to the other in order that an ionic solution circulates between said charged membrane and said filtration membrane on the side of the filtration membrane opposed to the side on which circulates the feed solution containing charged compounds, the charged compounds passing under electric forces through said filtration membrane in the ionic solution during passage in the electrodialysis cell, and neutral compounds remaining in the feed solution.
25. The system of claim 24, wherein said electrodialysis cell comprises, at least one cationic membrane, at least one filtration membrane, and at least one anionic membrane on the side of the filtration membrane opposed to the side of the cationic membrane.

Application No. PCT/CA2005/000337

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